

In the Claims

C²
Claim 33 (amended) A method for obtaining one or more candidate nucleotide sequences, the candidate nucleotide sequences being indicative of a sequence of a target polynucleotide molecule T, T producing a hybridization signal $I(\bar{x})$ upon incubating T with a polynucleotide \bar{x} for each polynucleotide \bar{x} in a set E of polynucleotides, the method comprising the steps of:

- (a) for each polynucleotide \bar{x} in the set E of polynucleotides, obtaining a probability $P_0(\bar{x})$ of the hybridization signal $I(\bar{x})$ when the sequence \bar{x} is not complementary to a subsequence of T and a probability $P_1(\bar{x})$ of the hybridization signal when the sequence \bar{x} is complementary to a subsequence of T; so as to obtain a probabilistic spectrum (PS) of T;
- (b) assigning a score to each of a plurality of candidate nucleotide sequences, the score being obtained in a calculation using the probabilistic spectrum and at least one reference nucleotide sequence H, the score being indicative of the candidate nucleotide sequence being a variant of H and furthermore being indicative of the probability that the candidate would give rise to the hybridization signal $I(\bar{x})$; and
- (c) selecting one or more candidate nucleotide sequences having an essentially maximal score.

C³
Claim 54 (amended) The method according to claim 33 wherein the target comprises two or more polynucleotide molecules.

C⁴
Claim 63 (amended) A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for obtaining a candidate nucleotide sequence, the candidate nucleotide sequence being indicative of a sequence of a target polynucleotide molecule T, T

producing a hybridization signal $I(\bar{x})$ upon incubating T with a polynucleotide \bar{x} for each polynucleotide \bar{x} in a set E of polynucleotides, the method comprising the steps of:

- (a) for each polynucleotide \bar{x} in the set E of polynucleotides, obtaining a probability $P_0(\bar{x})$ of $I(\bar{x})$ when the sequence \bar{x} is not complementary to a subsequence of T and a probability $P_1(\bar{x})$ of $I(\bar{x})$ when the sequence \bar{x} is complementary to a subsequence of T; so as to obtain a probabilistic spectrum (PS) of T;
- (b) assigning a score to each of a plurality of candidate nucleotide sequences, the score being obtained in a calculation using the probabilistic spectrum and upon at least one reference nucleotide sequence H, the score being indicative of the candidate nucleotide sequence being a variant of H and furthermore being indicative of the probability that the candidate would give rise to the hybridization signal $I(\bar{x})$; and
- (c) selecting one or more candidate nucleotide sequences having an essentially maximal score.

Claim 64 (amended) A computer program product comprising a computer useable medium having computer readable program code embodied therein for obtaining a candidate nucleotide sequence, the candidate nucleotide sequence being indicative of a sequence of a target polynucleotide molecule T, T producing a hybridization signal $I(\bar{x})$ upon incubating T with a polynucleotide \bar{x} for each polynucleotide \bar{x} in a set E of polynucleotides, the computer program product comprising:

- (a) for each polynucleotide \bar{x} in the set E of polynucleotides, computer readable program code for causing the computer to obtain a probability $P_0(\bar{x})$ of $I(\bar{x})$ the sequence \bar{x} is not

complementary to a subsequence of T and a probability $P_1(\bar{x})$ of $I(\bar{x})$ when the sequence \bar{x} is complementary to a subsequence of T;

- (b) computer readable program code for causing the computer to assign a score to each of a plurality of candidate nucleotide sequences, the score obtained in a calculation using the probabilistic spectrum and at least one reference nucleotide sequence H, the score being indicative of the candidate nucleotide sequence being a variant of H and furthermore being indicative of the probability that the candidate would give rise to the hybridization signal $I(\bar{x})$; and
- (c) computer readable program code for causing the computer to select a candidate nucleotide sequence having an essentially maximal score.

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